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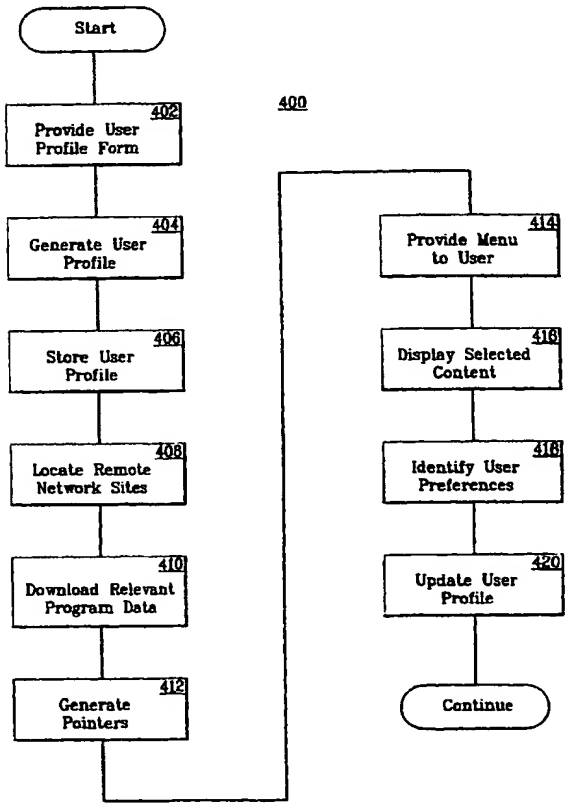
(54) Title: APPARATUS AND METHODS FOR LOCATING, DOWNLOADING, STORING, AND DISPLAYING SELECTED NETWORK-BASED PROGRAM DATA



(57) Abstract: Apparatus for locating, downloading, storing, and displaying certain user-selected, network-based program data includes a processor having a memory for storing the user profile, a network interface that couples the processor to a communications network, and a data storage device electrically connected to the processor. The processor is adapted to search the communications network to locate one or more remote network sites that include program data corresponding to the specified program data types, to download the program data from the located remote network sites to the data storage device, and to format the downloaded program data into a viewable format.

WO 01/01239 A2

APPARATUS AND METHODS FOR LOCATING, DOWNLOADING, STORING, AND DISPLAYING SELECTED NETWORK-BASED PROGRAM DATA

FIELD OF THE INVENTION

The present invention relates in general to network-based data processing systems. More particularly, the present invention relates to apparatus and methods for locating, downloading, storing, and displaying certain user-selected, network-based program data.

BACKGROUND OF THE INVENTION

A personal computer (PC), digital set top box (DSTB), satellite receiver, or other similar data processing system, interfaced to a communications network such as the Internet, can function as a network client and receive downloaded digital information from servers on the network. Typical network applications in which clients and servers are interconnected via a communications network are local area networks (LANs), wide area networks (WANs), intranets, or the Internet. Application software on the client is typically adapted to request downloads from one or more of the servers in response

to commands entered by the client user.

The Internet is a worldwide computer network via which host computer systems communicate with one another using the well-defined Internet Protocol (IP). Typically, each host has a unique Internet address. To further define the addresses of resources on the Internet, the Universal Resource Locator system was created. A Universal Resource Locator (URL) is a descriptor that specifically defines a type of Internet resource and its location. The user of a client, therefore, can access a Web server simply by entering the server's URL.

In an Internet application, a network browser running on the client typically includes programming for downloading content, or program data, from the World Wide Web (the "Web"). The browser is an operating system component or application program that allows the user to retrieve documents from the Web using simple point-and-click commands. Typical browsers allow for multimedia presentation of stored data including text, audio, and video.

Currently, program data can be downloaded onto the client in response to the client user's request for such data. The program data is typically provided to the user in whatever format the server ordains. It would be advantageous, however, if methods and apparatus existed for the user to preselect certain program data types, and have content corresponding to those preselected data types automatically downloaded and stored in a viewable format.

Thus, there is a need in the art for apparatus and methods for locating preselected program data on a computer network, downloading the preselected program data onto a client-based data storage device, and providing the program data to a user in a predefined, viewable format.

SUMMARY OF THE INVENTION

The present invention is directed to apparatus and methods for locating, downloading, storing, and displaying certain user-selected, network-based program data. A method according to the present invention comprises storing a user profile that specifies one or more preselected program data types, locating one or more remote network sites that include program data corresponding to the preselected program data types, and downloading the program data from the remote network

sites to a data storage device. The downloaded program data can then be displayed via a user interface in viewable format.

The downloaded program data can be stored on the data storage device as a plurality of segments, in which case a plurality of pointers are generated, with each pointer corresponding to one of the stored segments. A visual representation of each pointer can be provided to the user. The user can then select one or more of the pointers to display the downloaded program data stored in the segments corresponding to the selected pointers.

To generate a user profile, the user can be provided with an electronic profile request form that includes a plurality of predefined program data types. The user can select one or more program data types from among the plurality of predefined program data types. The user profile is then generated based on the user's selections and stored in memory.

One or more triggering events can be associated with the user profile, and on occurrence of the triggering event, a search for remote network sites that include program data corresponding to the preselected program data types is begun. Over time, the user's program preferences can be identified, and the user profile updated to specify program data types representative of the identified program preferences.

Apparatus for retrieving selected program data according to the invention comprises a processor having a memory for storing the user profile, a network interface that couples the processor to a communications network, and a data storage device electrically connected to the processor. The processor is adapted to search the communications network to locate one or more remote network sites that include program data corresponding to the specified program data types, to download the program data from the located remote network sites to the data storage device, and to format the downloaded program data into a viewable format.

BRIEF DESCRIPTION OF THE DRAWINGS

The foregoing and other aspects of the present invention will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawings. For the purpose of illustrating the invention, there is shown in the drawings an embodiment

that is presently preferred, it being understood, however, that the invention is not limited to the specific methods and instrumentalities disclosed. In the drawings:

Figure 1 includes a block diagram of apparatus according to the present invention.

Figure 2 depicts an example of an electronic user profile form that can be used in accordance with the present invention.

Figure 3 is a flow chart of a preferred embodiment of a method according to the present invention.

DESCRIPTION OF EXEMPLARY EMBODIMENTS AND BEST MODE

Overview

According to the present invention, a user fills out an electronic profile form that includes questions that define the user's preferences for program data (*e.g.*, news and entertainment programming). At a predetermined time, or in response to a specific instruction, a software agent begins accessing remote network sites to search for program data matching the user profile. Program data matching the user profile is downloaded, preferably in segments, to a data storage device connected to a host device such as a personal computer (PC), digital set-top box (DSTB), satellite receiver, or the like. As the program data is recorded to the data storage device, pointers can be generated for each segment. A menu page can be created that can include, for example, a suggested total program layout, brief descriptions of each segment, running times for each segment, and pointers so the user can "jump" from one segment to another. Over time, the agent can "learn" the user's viewing preferences and update the electronic profile accordingly.

Apparatus and Methods of the Present Invention

FIG. 1 includes a block diagram of a preferred embodiment of apparatus 100 for downloading selected program data from one or more remote network sites based on predefined user preferences. As shown, apparatus 100 comprises a network interface 130 that provides a communications path via a communications network 20 to a plurality of remote network sites 10 at which program data is expected to be found. Preferably, communications network 20 is the Internet, although communications network 20 can be a local area network (LAN),

BNSDOCID: <WO 0101239A2 >

wide area network (WAN), intranet, or the like.

In an application where communications network 20 is the Internet, the remote network sites 10 can be Web servers, with apparatus 100 functioning as a client. The servers and client can communicate with one another via the Internet using well known communications protocols such as HyperText Transfer Protocol (HTTP), File Transfer Protocol (FTP), etc.

Network interface 130 can be any interface that allows apparatus 100 to communicate via communications network 20. For example, if apparatus 100 is used in conjunction with a PC, network interface 130 can be an ordinary telephone line interface. Similarly, if apparatus 100 is used with a DSTB, network interface 130 can be a cable television (CATV) interface, for example.

Preferably, apparatus 100 comprises a user interface 140, which can be any interface that enables the user to interact with apparatus 100. For example, if apparatus 100 is used in conjunction with a PC, user interface 140 can comprise a video display terminal and include a user input device such as a keyboard or a mouse. Similarly, if apparatus 100 is used with a DSTB, user interface 140 can comprise a television screen and include a user input device such as a television remote control unit.

Apparatus 100 also comprises a processor 110, a memory 112, and a data storage device 120. Preferably, data storage device 120 is a removable magnetic digital data storage medium, such as a ZIP disk, floppy disk, or the like; although data storage device 120 can be stationary, such as the hard disk of a personal computer, for example.

Processor 110 is programmed to search the network to identify remote network sites 10 that have program data corresponding to the program data type(s) specified in a user profile stored in memory 112. Whenever a site is found that includes relevant program data, processor 110 can cause the program data to be downloaded from the identified site(s) to data storage device 120.

In the context of the present invention, program data can include any content that can be downloaded from a remote network site to apparatus 100. The content can be audio, video, or text. For example, the user can specify a program data type such as sports articles from a local newspaper. The program

data corresponding to this program data type would be text. Alternatively, the user can specify certain types of music. In this case, the corresponding program data would be audio. If the user specifies certain video content, such as a television program, for example, the entire video content of that program can be downloaded from the appropriate site.

To create a user profile, the user "fills out" an electronic profile request form. A sample electronic profile request form display is shown in FIG. 2. The profile request form is presented to the user via user interface 140. For example, if apparatus 100 is used in conjunction with a PC, the electronic profile form can be displayed to the user on the video display terminal. Similarly, if apparatus 100 is used with a DSTB, the electronic profile form can be presented to the user on the television screen.

In a preferred embodiment, the profile request form is formatted as a checkbox form and includes a plurality of predefined program data types from which the user can select program data types of interest to the user. Using an input device such as a mouse, keyboard, or television remote control unit, the user can select one or more program data types from among the plurality of predefined program data types simply by "checking" the appropriate boxes. A user profile that specifies the one or more selected program data types is generated and stored in memory 112.

The user profile form can be designed so that the user can specify any type of program data, to any level of specificity. For example, the user can specify news programming in general (*e.g.*, local news, national news, etc.), or, more specifically, type of news (*e.g.*, business, sports, national politics), or, even more specifically, types of news from specific sources (*e.g.*, articles from the *Wall Street Journal* about the Federal Reserve, excerpts from *60 minutes* about cancer research). For entertainment programming, the user can specify generic types of programs (*e.g.*, comedy, drama, talk shows) or specific programs (*e.g.*, *Seinfeld, 60 Minutes, The Late Show*).

Preferably, processor 110 is programmed with a software agent that can search the communications network and access remote network sites known to include program data

corresponding to the program data types specified in the user profile. This process can begin on the occurrence of a triggering event associated with the user profile. The triggering event can be based, for example, on a specified time of day, or the occurrence of a specified event. For example, the user might want to have the latest news when he gets home from work. In this case, the user could specify that the agent access the remote network sites at a certain time each night, *e.g.*, at a time just before he gets home from work. Alternatively, the user could specify that the agent access the remote sites whenever he starts up his PC or DSTB.

Using the user profile stored in memory 112, the agent searches the network to locate one or more remote network sites that include program data corresponding to the preselected program data types specified in the user profile. The agent can accomplish this by searching certain network sites to locate certain program data thereon, or by searching the network generally to locate remote network sites that include subject matter, or content, related to the specified program data types. For example, the agent can be instructed to connect to a specific network site and search for content related to professional football, or the most recent episode of a specified sitcom, or a song by a specified artist. Similarly, the agent can be instructed to search the network generally to locate network sites that include content related to a certain professional football team or comedian or singer.

Any network search algorithm capable of requesting a download from a remote network site can be used in accordance with the present invention. In a preferred embodiment, the search algorithm is programmed into processor 110. Preferably, the search algorithm can request a download of specific content from a specific remote network site (*e.g.*, by addressing the site using the site's URL), or can search the network generally and request program data downloads from sites having relevant content. Many search algorithms are currently known in the art, and it is anticipated that more sophisticated search algorithms will continue to be developed.

Whenever the agent locates a remote network site that includes program data corresponding to the preselected program data types, the agent causes the program data to be downloaded from the remote network site to data storage device 120.

As the program data is downloaded, the processor causes the data to be stored on the data storage device in a format such that, when the user requests the program data, the apparatus of the present invention can provide the program data in a viewable format. The program data can be provided to the user via user interface 140 and, depending on the type of program data requested, can be in any of a number of viewable formats.

For example, if the user profile specifies program data types that result in textual program data (newspaper or magazine articles, for example), the apparatus can display the program data (on the PC monitor or television screen) in a newspaper format. If the user profile specifies audio program data, the apparatus can provide the audio as a serial string of audio components, such as one would find on a compact disc or audio tape. Similarly, if the user profile specifies video program data, the apparatus can provide the video as a serial string of video components, such as one would see on television, or at the theater. In this way, the user could create a customized newspaper, audio recording, or video recording that includes only content of interest to the user.

In a preferred embodiment, the downloaded program data is stored on the data storage device as a plurality of segments. A plurality of pointers is generated, each of which corresponds to one or more of the stored segments. The user can then access the video content at anytime, in any order, via the electronic pointers. The user is provided with a visual representation of each generated pointer. The user can then select from among the pointers and the downloaded program data stored in the stored segments corresponding to the selected pointer is displayed in a viewable format. Thus, the apparatus can provide the user with customized news and entertainment programming that is automatically downloaded from the network, and edited into a "program" style offering that includes a pointer to each segment so that the user can "jump" around the downloaded program data if desired.

The software agent can also identify program preferences of the user and update the stored user profile to include the identified program preferences. The agent will then provide to the user, not only the specific content or types of content specified by the user, but also additional, unspecified

content that matches the identified program preferences.

For example, each type of program data can be classified into one or more predefined groups such as comedy, news, games, sports, etc. Over time, the software agent can determine that a particular user tends to be more interested in sports, for example, and less interested in news (because the user frequently requests sports-related content, but less frequently requests news-related content). The software agent would then search the network for more sports-related content, while ignoring news-related content, unless specifically requested otherwise by the user. The software agent can be programmed to recognize any number of content classifications.

Similarly, each content classification can be divided into any number of subclasses. For example, the classification of sports can be divided into golf, tennis, football, etc. Thus, if the user tends to request content related to golf more frequently than any other sport, the agent can search for unspecified golf-related content, while providing other sports related content only on request.

Figure 3 is a flowchart of a method 400 for formatting preselected network-based program data. At step 402, a user is provided with an electronic profile request form that includes a plurality of predefined program data types. A user profile is generated at step 404, based on the user's selection of one or more program data types from among the plurality of predefined program data types. At step 406, the user profile is stored in a memory.

At step 408, one or more remote network sites that include program data corresponding to the preselected program data types is located. This can occur at a predetermined time, or on the occurrence of a triggering event associated with the user profile. The program data is downloaded, at step 410, from the located remote network sites to a data storage device. Preferably, the downloaded program data is stored on the data storage device as a plurality of segments. A plurality of pointers, each of which corresponds to one of the stored segments, is generated at step 412.

At step 414, a visual representation of each pointer is provided at a user interface. The user can then elect to view one or more of the stored program data segments by selecting the pointers corresponding to those segments. At step

416, the downloaded program data stored in the segments corresponding to the selected pointers is displayed at the user interface in a viewable format.

As time goes on, the stored user profile can be updated automatically by identifying program preferences of the user at step 418 and then, at step 420, updating the user profile to specify program data types representative of the identified program preferences. The process returns either automatically to step 406, or with user intervention to step 402, and continues as long as the agent is running.

Those skilled in the art will appreciate that numerous changes and modifications may be made to the preferred embodiments of the invention and that such changes and modifications may be made without departing from the spirit of the invention. It is therefore intended that the appended claims cover all such equivalent variations as fall within the true spirit and scope of the invention.

I claim:

1. A method for retrieving preselected network-based program data comprising:

storing in a memory a user profile that specifies one or more preselected program data types;

locating one or more remote network sites that include program data corresponding to the preselected program data types; and

downloading the program data from the located remote network sites to a data storage device.

2. The method of claim 1, further comprising:

storing the downloaded program data on the data storage device as a plurality of segments;

generating a plurality of pointers, wherein each pointer corresponds to one of the stored segments;

providing at a user interface a visual representation of each pointer; and

displaying at the user interface the downloaded program data stored in the segment corresponding to a selected pointer selected from among the plurality of pointers.

3. The method of claim 1, further comprising:

providing a user with an electronic profile request form that includes a plurality of predefined program data types; and

generating the user profile based on the user's selection of one or more program data types from among the plurality of predefined program data types.

4. The method of claim 1, further comprising:

displaying the downloaded program data on a user interface in viewable format.

5. The method of claim 1, further comprising:

identifying program preferences of a user; and

updating the user profile to specify program data types representative of the identified program preferences.

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6. The method of claim 1, further comprising:

associating a triggering event with the user profile; and

on occurrence of the triggering event, locating the one or more remote network sites that include program data corresponding to the preselected program data types.

7. The method of claim 6, wherein the triggering event is based on a specified time of day.

8. The method of claim 6, wherein the triggering event is based on the occurrence of a specified event.

9. Apparatus for formatting selected program data, the apparatus comprising:

a processor having a memory for storing a user profile that specifies one or more program data types;

a network interface that couples the processor to a communications network; and

a data storage device electrically connected to the processor;

wherein the processor is adapted to search the communications network to locate one or more remote network sites that include program data corresponding to the specified program data types, to download the program data from the located remote network sites to the data storage device, and to format the downloaded program data into a viewable format.

10. Apparatus according to claim 9, wherein the processor is further adapted to store the downloaded program data on the data storage device as a plurality of segments, to generate a plurality of pointers, wherein each pointer corresponds to one of the stored segments, to providing at a user interface a visual representation of each pointer, and to display at the user interface the downloaded program data stored in the segment corresponding to a selected pointer selected from among the plurality of pointers.

11. Apparatus according to claim 9, wherein the processor is further adapted to provide a user with an electronic profile request form that includes a plurality of predefined program

data types, and to generate the user profile based on the user's selection of one or more program data types from among the plurality of predefined program data types.

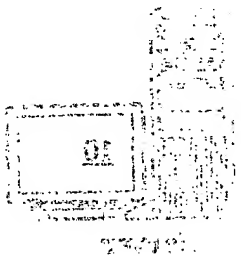
12. Apparatus according to claim 9, wherein the processor is further adapted to display the downloaded program data on a user interface in viewable format.

13. Apparatus according to claim 9, wherein the processor is further adapted to identify program preferences of a user, and to update the user profile to specify program data types representative of the identified program preferences.

14. Apparatus according to claim 9, wherein the processor is further adapted to associate a triggering event with the user profile and, on occurrence of the triggering event, to locate the one or more remote network sites that include program data corresponding to the preselected program data types.

15. Apparatus according to claim 14, wherein the triggering event is based on a specified time of day.

16. Apparatus according to claim 14, wherein the triggering event is based on the occurrence of a specified event.



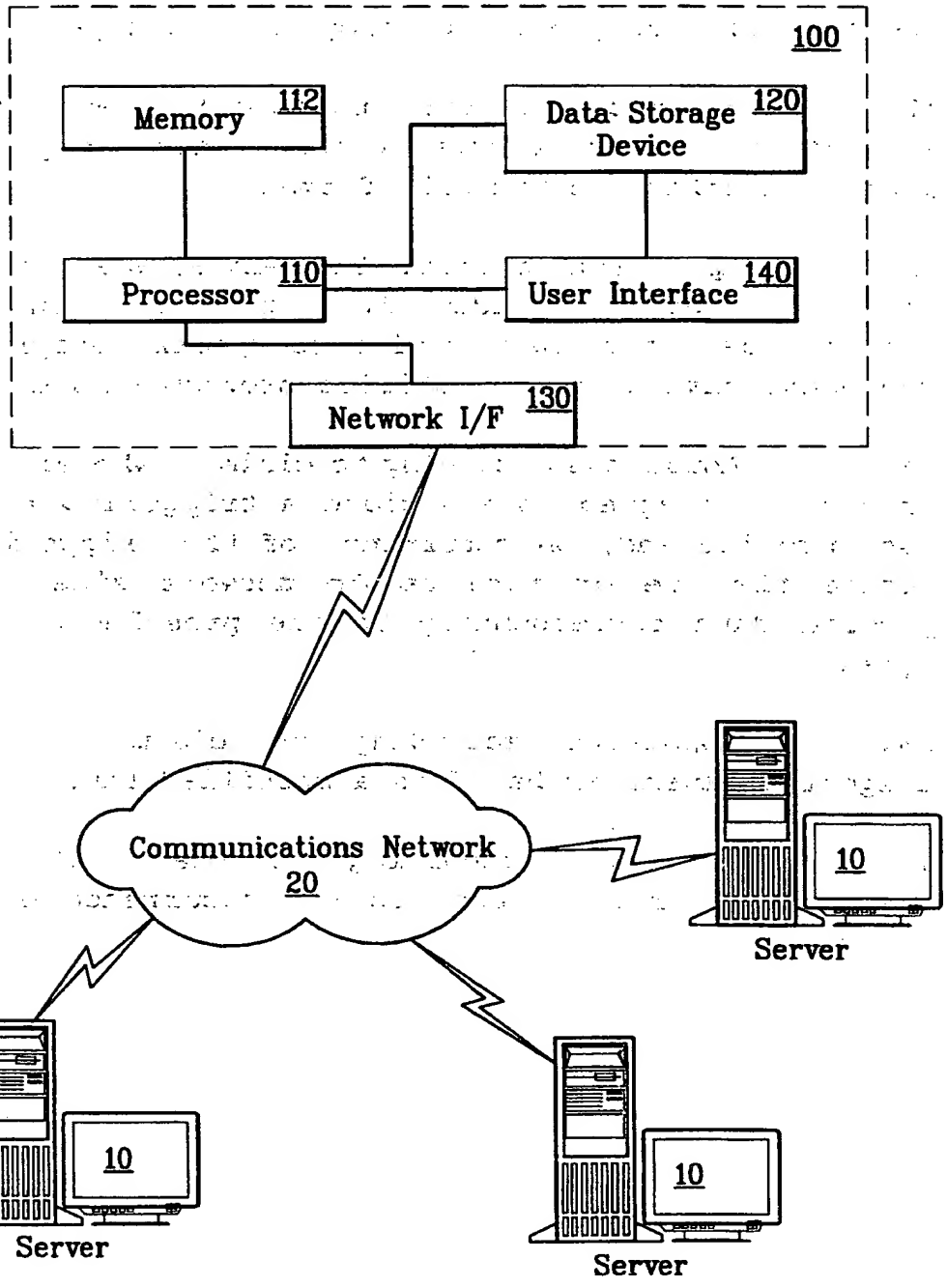

100
Memory
112
Data Storage Device
120
Processor
110
User Interface
140
Network I/F
130
Communications Network
20
10
Server
10
Server
10
Server

FIG. 1

FIG. 2

ELECTRONIC USER PROFILE FORM

___ Download News relevant to:
- ___ The White House
- ___ Cancer Research
- ___ Other _____

___ Search Generally for relevant News

___ Locate relevant News at specific sites:
- ___ Newspapers
  - ___ Wall Street Journal
  - ___ New York Times
  - ___ Washington Post
- ___ Television News
  - ___ ABC
  - ___ CBS
  - ___ CNN
  - ___ Local
- ___ Radio News
  - ___ WKYW
  - ___ WKRP

___ Download Video Content relevant to:
- ___ Comedy
- ___ Cooking

___ Search Generally for relevant Television Programming

___ Locate relevant TV Programming at specific sites:
- ___ ABC
- ___ FoodTV

___ Download Specific Programs
- ___ Seinfeld
- ___ 60 MInutes

___ Download Audio Content relevant to:
- ___ Italian Opera

___ Search generally for relevant Audio Content

___ Download any content relevant to:
- ___ Sports
  - ___ Tennis
  - ___ Golf
  - ___ Football

___ Search on startup

___ Search at specified time _____

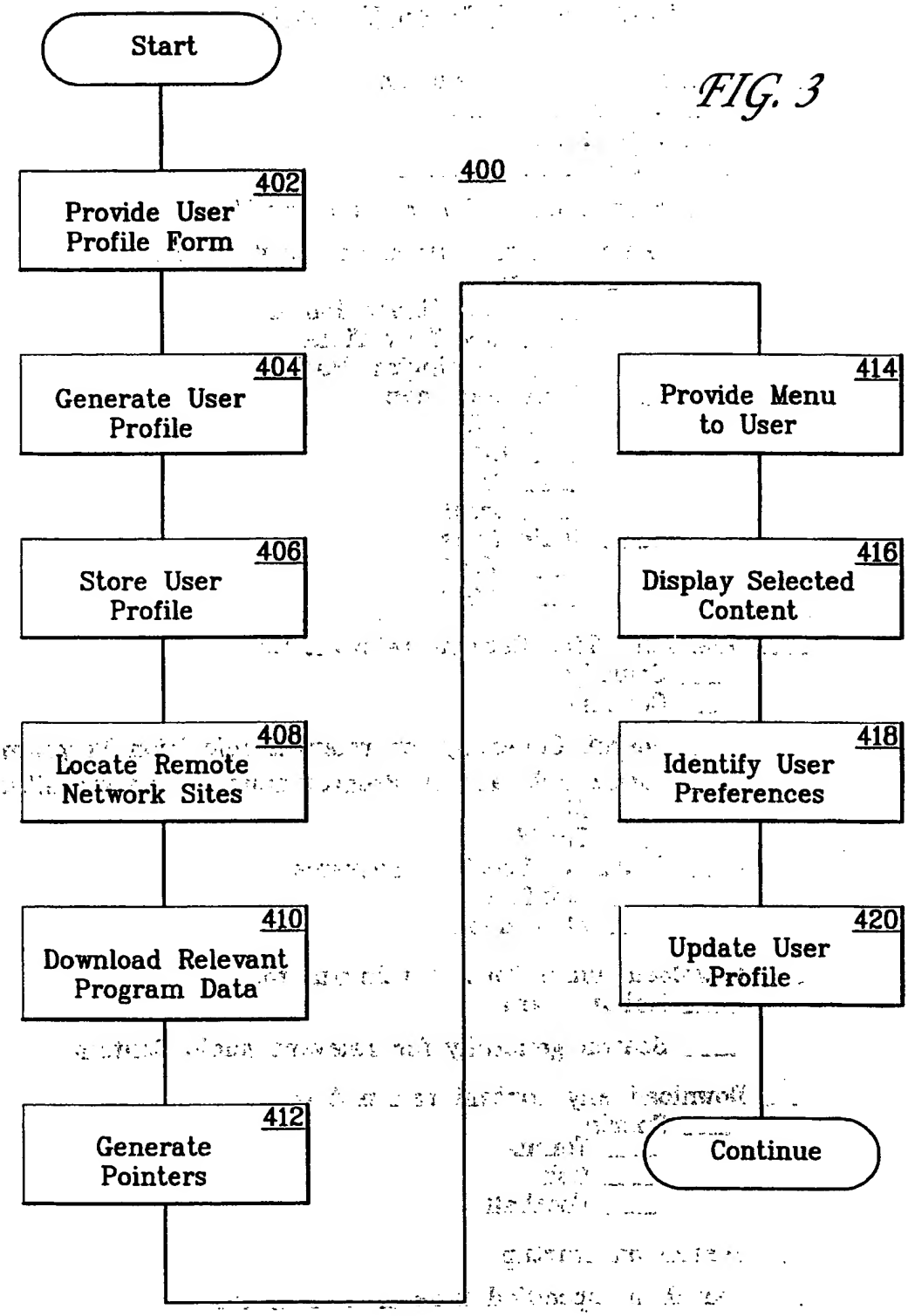
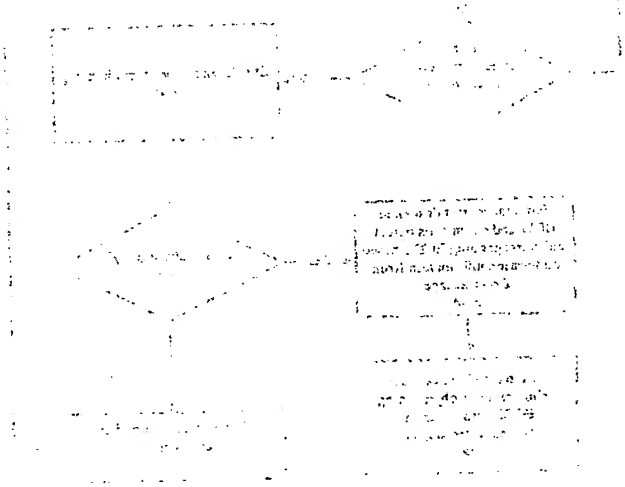

Start
400
402
Provide User Profile Form
404
Generate User Profile
406
Store User Profile
408
Locate Remote Network Sites
410
Download Relevant Program Data
412
Generate Pointers
414
Provide Menu to User
416
Display Selected Content
418
Identify User Preferences
420
Update User Profile
Continue

FIG. 3

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